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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/719,062

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EXAMINER

FLOOD, MICHELE C

ART UNIT

PAPER NUMBER

1655

MAIL DATE

DELIVERY MODE

05/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/719,062	Applicant(s) TSUJI ET AL.	
	Examiner Michele Flood	Art Unit 1655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Claim Rejections - 35 USC § 103

Claims 1, 4, 5, 7 and 9 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffman (A*) in view of Clark et al. (B*) and Raven et al. (U). The rejection stands for the reason set forth in the previous Office action and for the reason set forth herein.

Applicant's arguments have been fully considered but they are not deemed persuasive because the cited references provide the suggestions and motivation to the claimed invention.

In response to Applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the primary reference of Hoffman was relied upon because Hoffman teaches a method of introducing a substance into plant tissue comprising use of an implantable device for the release of active substances to plants which the substance is distributed to the open pores of the plant. For example, Hoffman teaches that the implant can be inserted into

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the plant's shoot axis by inserting it into previously formed cavities; and that is particularly suitable for the use in plants having lignified sprouts, in Column 4, lines 18-23. Any material may be used as active substance such as plant restoratives, growth regulators or nutrients (See abstract; Column 3, lines 49-54; and, Column 4, lines 18-22.). Hoffmann further teaches that low water potential inhibits the release of active compounds (See Column 1, lines 25-29.). Low water potential is caused by transpiration, which can be prevented by removing leaves or applying an anti-transpirant. Because Hoffman teaches the instantly claimed invention except for increasing an amount of the substance through the conductive tissue of the branch by employing an inhibiting means for the inhibition of transpiration through a leaf on the branch such that a driving force of transpiration provides a flow of the substance into the conductive tissue and using a chemical that closes stomata as an inhibiting means, the secondary references of Clark and Raven were relied upon because the both taught that the instantly claimed process steps and experimental conditions were known to increase the flow of absorbed substances through the conductive tissue of plant due to a driving force of transpiration. For instance, Clark taught a method that can reduce plant water loss by closing stomata openings and reducing plant transpiration in dicotyledonous plants by chemical means. Clark further taught, "Transpiration is the evaporation of water from plant tissue. The major water loss through the leaves and usually occurs in two simultaneously operating stages; first, evaporation of water from the moist cell walls into the intercellular spaces o the leaf, and second, diffusion of water vapor from the intercellular spaces, though the stomata, to the outside air", in Column 1

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lines 29-35. In Column 1, lines 58-60, Clark taught that pruning of leafy branches can be used as a mean to inhibit transpiration. The compositions taught by Clark can be applied to plants to form a substantially water impervious barrier on the surface of leaves: "The stomata actions are interfered with and the water transpiration is substantially stopped. The movement of oxygen and other transpiration gases, is however, apparently not impaired, as no phytotoxic symptoms are generally observed." See Column 5, lines 4-17. Secondly, like Clark, Raven taught that transpiration is a major determining factor in the movement of solutes and water through the plant body from the ground to the atmosphere: "From the root hairs, the water moves through the cortex, the endodermis (the inner later of cortical cells), and the pericylce, and into the primary xylem". See page 524, under "Absorption by Roots". Under the same heading, Clark also taught that the transpiration stream, in addition to keeping the leaves of the plant provided with water, distributes mineral ions to the shoot as well; and, that when transpiration is occurring, the ions are carried rapidly throughout the plant. Other factors affecting the rate of transpiration include carbon dioxide concentration in the intercellular spaces, light, temperature, atmospheric humidity, air currents, and availability of soil water. Most of these factors have an affect on the opening and closing of stomata. Raven also taught that the physiology of the conductive tissue of plants, the unique properties of water, the principles governing the movement of water through plant tissue, water potential, hydrostatic pressure in plant cells (turgor pressure), and water tension affect the translocation of water and solutes through plant vessels, sieves, phloem and xylem; and the evaporation of plant water through stomata.

Thus, with Clark teaching the beneficial effect of using chemical means to close stomata openings; and, with Raven teaching the factors affecting plant transpiration and movement of water and solutes through the conductive tissue of plants of photosynthesizing plant tissue, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method taught by Hoffmann with the methods taught by Raven and Clark. Thus, at the time the invention was made, one of ordinary skill art would have been motivated and one would have had a reasonable expectation of success that the combining of the method taught by Hoffman with the method taught by Clark would provide the instantly claimed method because Raven teaches closing of stomata, such as the chemical inhibiting means used in the closure of leaf stomata taught by Clark, not only prevents loss of water from the leaf but causes a transpiration stream for the rapid movement of ions throughout the plant; Raven also taught that absorption of substances into a sieve tube decreases its water potential and causes water to move into the sieve tube from the xylem and mass flow of the substance out of the sieve tube with the movement of water from a source to sink. Given, the foregoing it would have been *prima facie* obvious to one ordinary skill in the art that the combining of the method for introducing a substance into exposed conductive tissue taught by Hoffman with the transpiration inhibiting means by chemical closure of leaf stomata taught by Raven would create a driving force of transpiration that would increase an amount of the substance introduced into the conductive tissue by the method of introducing a substance into plant vessels taught by Hoffman, contrary to Applicant's arguments.

Accordingly, the claimed invention was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, especially in the absence of evidence to the contrary.

No claims are allowed.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michele Flood whose telephone number is 571-272-0964. The examiner can normally be reached on 7:00 am - 3:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terry McKelvey can be reached on 571-272-0775. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michele Flood
Primary Examiner
Art Unit 1655

MCF
May 12, 2008

/Michele Flood/
Primary Examiner, Art Unit 1655